

# Direct Potable Reuse in Colorado: Regulatory Framework and the PureWater Colorado Demonstration

Water Resources Review Committee  
June 19, 2018 – Denver, Colorado

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**WATER**  
OUR FOCUS  
OUR BUSINESS  
OUR PASSION

  
*Engineers...Working Wonders With Water®*



**COLORADO**  
Department of Public  
Health & Environment

 **WATERUSE**  
COLORADO

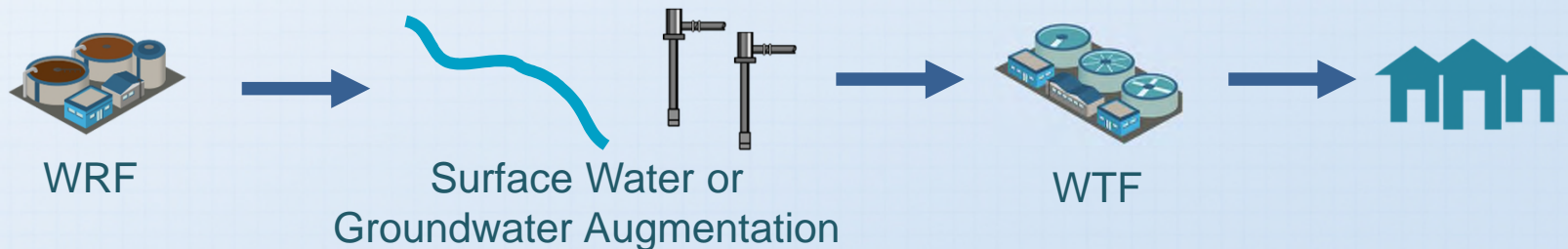
# Some quick\* definitions

*\* DPR regulatory effort  
will add specificity!*

## Non-potable reuse (Reg. 84)



## Indirect potable reuse (IPR)



## Direct potable reuse (DPR)





# What's the role of reuse in Colorado?

Non-  
potable  
reuse

Some  
surface  
water IPR

No DPR  
projects in  
place or  
imminent



COLLABORATING ON COLORADO'S WATER FUTURE  
**COLORADO'S  
WATER PLAN**

EXECUTIVE SUMMARY

**"... potable reuse  
will be an  
important facet  
of closing the...  
gap"**

**2050**

POPULATION

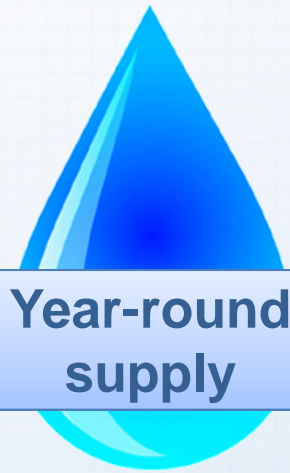
**~2X**

M&I SUPPLY  
GAP

**560K**

AC-FT/ YEAR

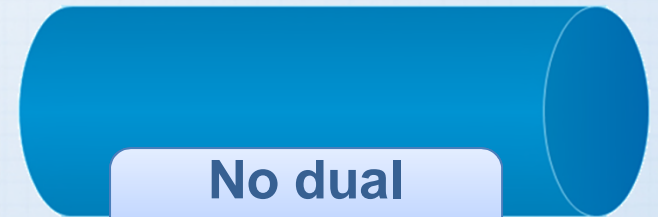
# Why is interest in DPR growing in Colorado?



**Year-round  
supply**



**Year-round  
demand**



**No dual  
distribution**



**Others have  
“gone first”**



**Increasingly cost-competitive  
vs. traditional supplies**

# Two quotes help us put potable reuse in context

It “rains” every day  
at the wastewater  
treatment plant!





# Two quotes help us put potable reuse in context

Water should be judged by its quality – not its history!



# WaterReuse Colorado Project proactively supports DPR implementation in Colorado



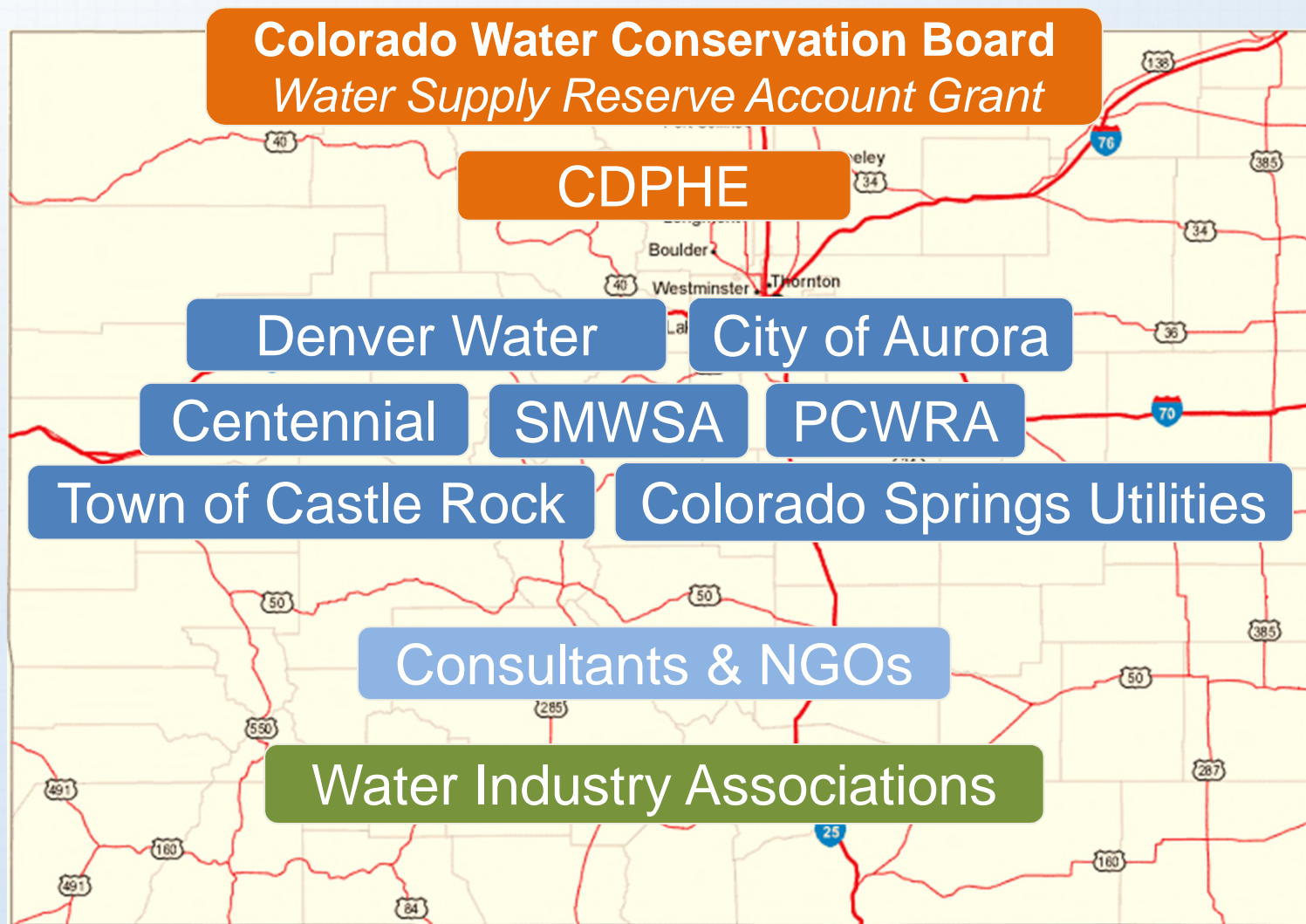
## DPR PROJECT OUTCOMES

Regulatory  
framework

Outreach  
tools and  
products

Planning  
tools to  
assess  
DPR  
options

# WaterReuse Colorado DPR project collaborators included leading utilities and organizations





# WateReuse DPR Project Workgroups Tackled Regulatory and Outreach Topics

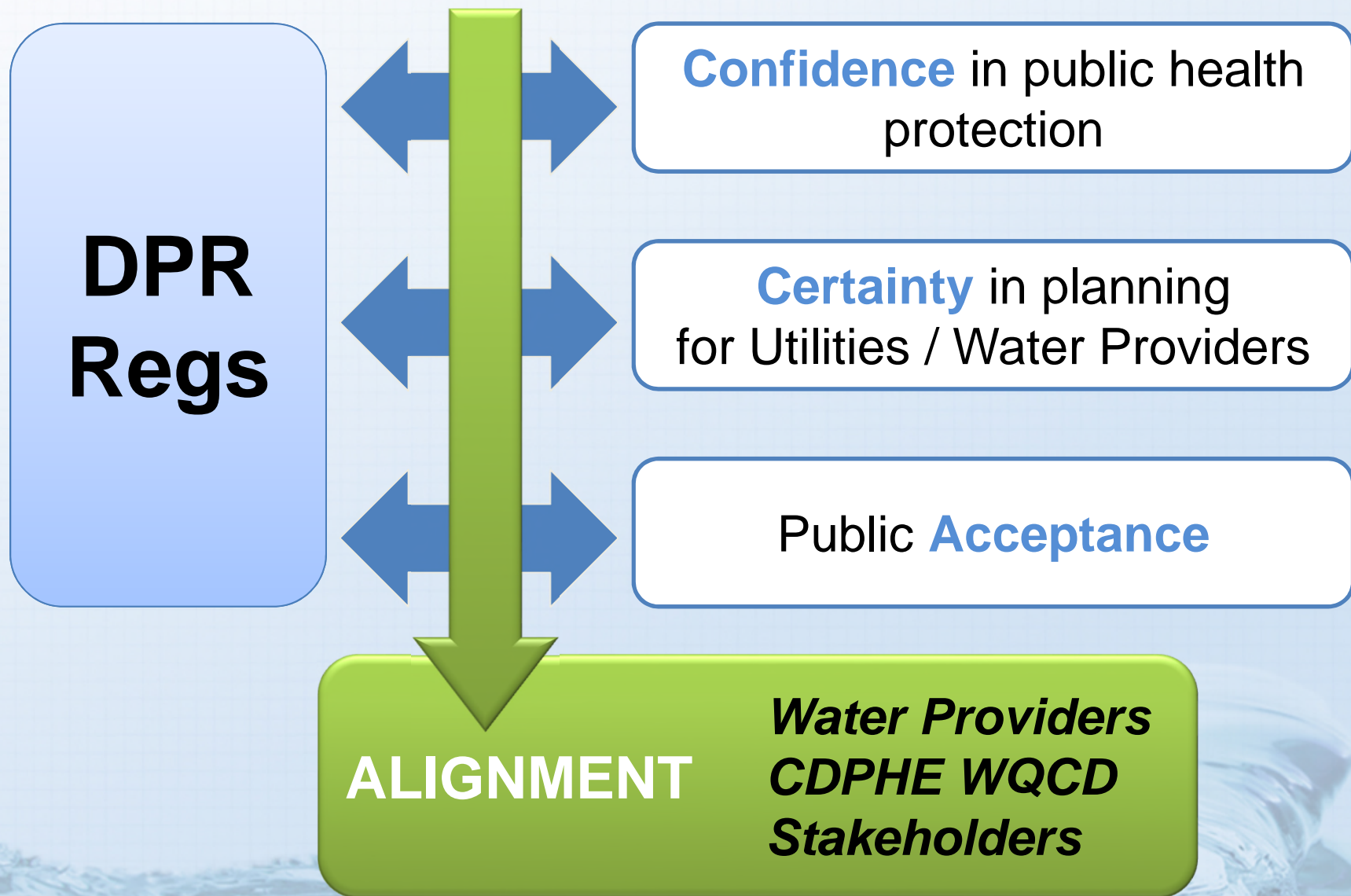




# Regulatory Development



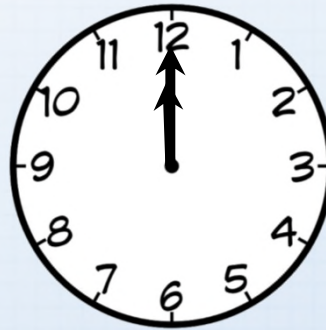
# Why develop DPR regulations?



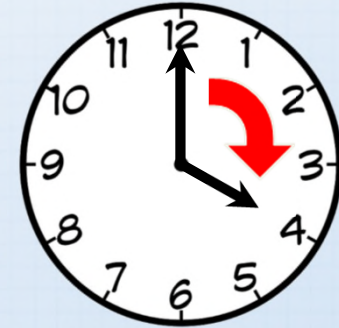
# When is the right time to develop DPR regulations?



Before a  
DPR  
project is  
proposed



Concurrent  
with a  
project's  
design



During or  
after  
startup of a  
project



# Flexibility and adaptability through Colorado's established reg structure



## Regulation

Fundamental, enforceable requirements



## Policy

Interprets the Regulation

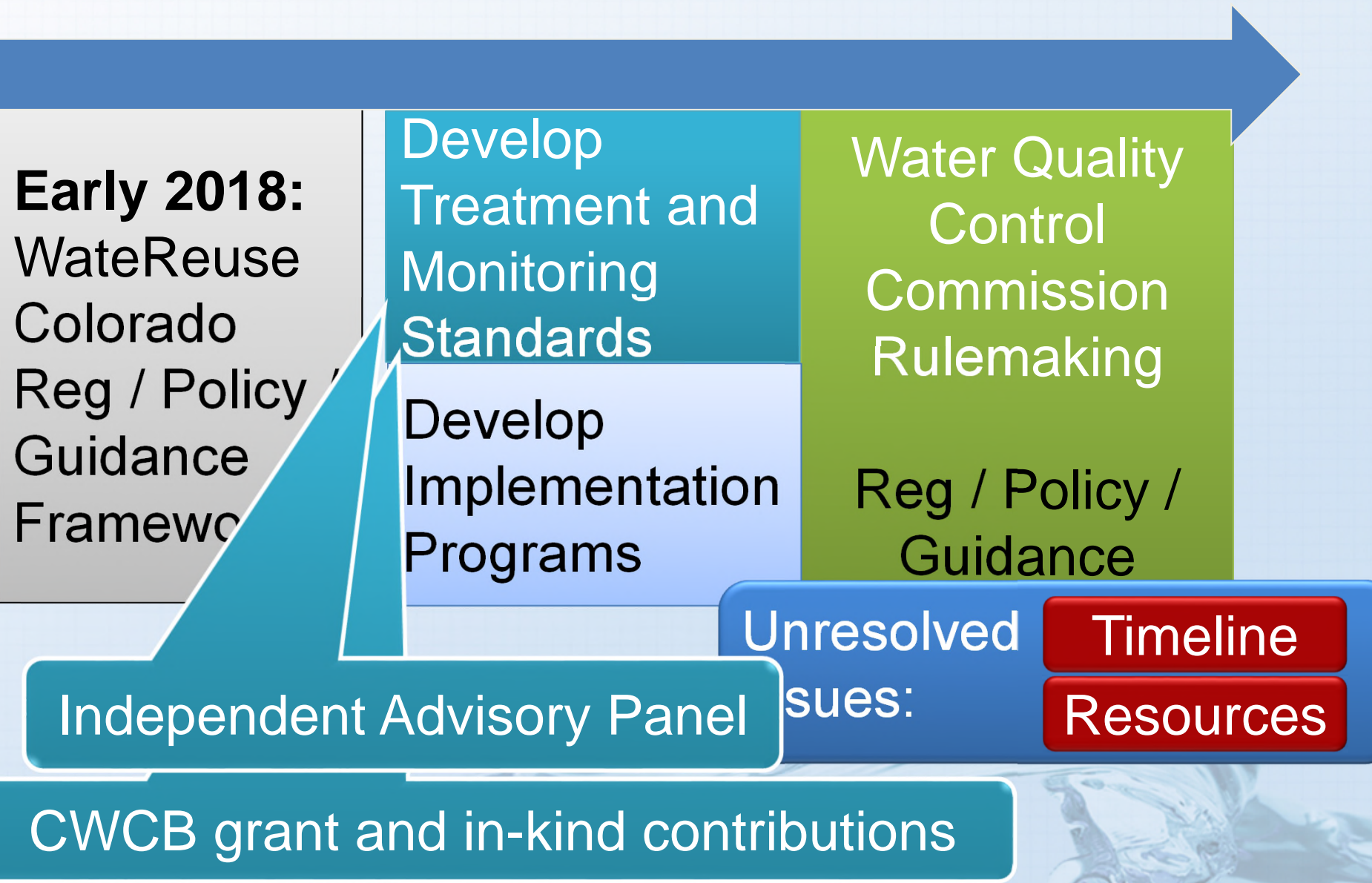


## Guidance

Best practices

*Fosters public confidence*

# Path from framework to regulation





# Future Efforts and Water Quality Commission Role

- Secure funding/resources for rulemaking and implementation in 2019 or 202\_?
  - Staff (FTE)
  - Expenses for operating and A.G. support (\$)
  - Database (\$)
- Division-led stakeholder effort
- Division develops regulatory proposal
- Formal rulemaking to address DPR
- Flesh out the framework with completed policies and guidance



## Outreach at the PureWater Colorado Demonstration Project



# PureWater Colorado Demonstration Basics

## Who

- WateReuse Colorado, Carollo Engineers, and Denver Water
- Plus many project partners collaborating to make this happen!

## What

- Purifying secondary treated wastewater to drinking water standards

## When

- January through mid-April 2018

## Where

- Hosted at Denver Water Recycling Plant

## Why

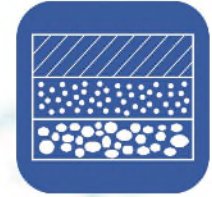
- Provide physical context to DPR regulatory and public outreach work and demonstrate the ability to purify recycled water

# PureWater Colorado Demonstration Processes

Barrier 1:  
**Ozonation**



Barrier 2:  
**Biofiltration**



Barrier 3:  
**Microfiltration**



Barrier 4:  
**Granular  
Activated Carbon**



Barrier 5:  
**UV/Advanced  
Oxidation**





# Tours Reached a Wide Audience

State legislators (WRRC/staff)

State agencies – CDPHE, CWCBC

Chamber of Commerce

Water utility managers

Bureau of Reclamation

University students and faculty

AWWA and WaterReuse Colorado





# The Project Received Broad Media Coverage

- Coverage on all major Denver TV networks as well as print/social media





# Ongoing Outreach from the PureWater Colorado project



INVINTIONS  
A Creative Winery



## Outreach Events and Scholarships



## Materials Available for Future Outreach

# Takeaways

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Significant progress in preparing Colorado to implement DPR projects

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Still some needs for regulatory development

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Model of success – partnerships and collaboration between utilities, CDPHE, and engineering firms

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Outreach, regulatory development, and public confidence are all interlinked



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